REMARKS

Claims 1-15 are pending in this application. Claims 4, 9-11, 14, and 15 have been withdrawn from consideration by the Examiner. Claim 2 has been cancelled. Claims 1, 3, 4, 5, 6, 8, 12, and 13 have been amended.

Claim 2 is cancelled since it was incorporated into claim 1. Claim 1 is amended to expedite prosecution by further clarifying the terms TCR, A, and B and to incorporate claim 2. Claim 3 is amended to take out the reference to claim 2, since claim 2 has been cancelled. Claim4, if not withdrawn (see below), is amended to remove the multiple dependency and to match the antecedent terminology (change "B" to "Z"). Claims 5, 6, 13 are amended to remove the multiple dependency. Claim 6 is amended to match the antecedent terminology (change "B" to "Z"). Claim 8 is amended to include the SEQ ID NO. for the sequence. Claim 12 is amended to independent claim form. Claim 13 is amended to expedite prosecution by further clarifying the therapeutic use in the preamble of the composition claim.

Request for Clarification

Applicant requests clarification of which SEQ ID Nos. were examined by the Examiner. The list includes "17-2". Applicant assumes that the second number is supposed to be a number other than "2", such as "26".

Election/Restriction

The election/restriction requirement was made final by the Examiner as to nonelected species, claims 4, 9, 10-11, 14-15 and, thus, those claims are indicated to be withdrawn.

It is acknowledged by Applicant that the requirement has been made final; however, Applicant wishes to clarify the following and argue that claims 4, 9-11, and 14 should now be rejoined since non-elected species have been examined.

The current application is a national stage application of a PCT. The standard for determining unity of invention are dictated by 37 C.F.R. 1.475 rather than 37 C.F.R. 1.141. See

MPEP 1896 Unity of Invention (p. 1800-126) and 37 C.F.R. 1.499. PCT Rule 13.2 specifically defines unity of invention when the inventions involve one or more of the same or corresponding technical features. Special technical feature is the contribution each invention makes over the prior art. The Examiner must disregard the restriction practice criteria for regular U.S. applications in favor of the PCT requirement of unity of invention.

The common technical feature between claims 1-14 and claim 15 is "a peptide according to any one of claims 1 to 12". See PCT Administrative Instructions, AI-39 to 50. The Examiner's reasoning that the method can be practiced with a materially different peptide such as RGD analogs is improper reasoning under the PCT unity of invention, as opposed to the U.S. national filing restriction requirement. There need only be a common technical feature, and this has been met. Thus, it is believed that claim 15 should have been examined under the unity of invention standard.

The Examiner has combined those C.F.R. sections relating to national filing applications with those relating to national stage applications of PCT filed applications. Therefore, it is difficult to determine whether the correct standards have been applied and whether the Examiner has met his burden.

For example, independence, distinctiveness and serious search burden are the criteria applicable to U.S. national filings only under 35 U.S.C. 111(a) and NOT filings under 35 U.S.C. 371.

Further, it is not clear from the MPEP whether species election practice is applicable to PCT national stage applications. However, likewise on the species election requirement, see Exs. 4, 15, 16, 17 Administrative Instructions and AI-43 to 46. The species have a property or activity in common and share the common structure shown in claim 1, thus the species meet the unity of invention standard.

Putting aside the question of whether the original species election requirement is even applicable to PCT national stage applications, Applicant believes claims 4, 9-11, 14 should be rejoined and considered. The Examiner has already examined outside the scope of the originally

elected species and the Examiner found species SEQ ID NO. 7, 6, 8-15, 17-2[sic] allowable, being free of prior art. Claim 4 reads on claims 1-3, and claims 1-3 have been examined. Claim 12 reads on claims 9-11, and claim 12 has been examined. Since claim 11 should be rejoined and claim 14 is dependent on claim 11, claim 14 should be rejoined as well.

There are additional reasons why claim 4 should be examined. Claim 4 is dependent on claim 1 wherein Z is Arg or Lys. Claim 4, therefore, reads on the elected species, SEQ ID NO. 7. The sequences of claim 4 encompass the species of the SEQ ID Nos. which were actually examined by the Examiner, thus it is not understood why the claim was withdrawn. Also, this claim is similar in scope to claim 6, with different charged amino acids. Claim 6 was examined, but claim 4 was not. Withdrawal of claim 4, therefore is believed to be improper for these additional reasons.

Objections

Claims 5-7, 12-13 were objected to under 37 C.F.R. §1.75 as being in improper form because a multiple dependent claim should refer to other claims in there alternative and cannot depend on any other multiple dependent claim. MPEP 608.01(n).

Claims 5-6, 12-13 have been amended to make them solely dependent on non-multi-dependent claims or to make them independent claims. Claim 7 is dependent on claim 6. This objection should now be removed.

Claim 8 was objected to because of the following informalities: Applicants are requested to recite the SEQ ID NO. for the peptide claimed.

Claim 8 as amended recites the SEQ ID NO. for the peptide claimed. This objection should now be removed.

35 U.S.C. §112, 2nd Paragraph

Claims 1-3, 5-8, 12 and 13 were rejected under 35 U.S.C. §112, 2nd paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It was asserted by the Examiner that:

In claim 1, it is unclear what TCR means. Applicants are requested to spell out TCR in the claim.

In claim 1, it is unclear if A and B are selected as a variable or amino acids. A is the single letter designation for "Ala" and B is the single letter designation for "Asx". It is believed that Applicants intend A and B to be variables. Applicants are, therefore, requested to use some other designator.

Claim 13 recites a therapeutic composition. However, it is unclear what the composition is active against to render it a therapeutic.

Claim 12 is dependent upon a withdrawn claim. Appropriate correction is requested.

Applicant respectfully traverses the first rejection of claim 1. Though Applicant believes claim 1 as originally written is clear when read in the context of the specification, claim 1 as amended spells out the full words, "T-cell antigen receptor", for the abbreviation "TCR". This rejection should now be overcome.

Claim 1 as amended substitutes "X" and "Z" for the designators "A" and "B", respectively. This rejection should now be overcome.

Applicant respectfully traverses the rejection of claim 13. Applicant believes that claim 13 as originally written is clear. Applicant believes that the preamble word "therapeutic" is unnecessary to the meaning of the claim since the claim is directed to a composition comprising the peptides of the invention and a pharmaceutically acceptable carrier, rather than a method of use claim. Further description of the activity of the composition does not render the preamble, and thus, claim, any more clear. However, in order to expedite prosecution, language specifying

that the therapeutic is "active against disorders in which T-cells are involved or recruited" has been added which describes the therapeutic activity. This rejection should now be overcome.

Claim 12 as amended is an independent claim; therefore, the rejection should now be moot.

35 U.S.C. §102

Claims 1-3, 6, 13 were rejected under 35 U.S.C. §102 as being anticipated by Mozes *et al.* The Examiner asserts that "[t]he claims are drawn hydrophobic peptide and therapeutic composition thereof which the below peptide are within the scope of the present claims." The Examiner further asserts that "[t]he reference teach the peptide LLVIVELIPSTSSAV that read on the claimed peptide of claim 1 (see page 11, line 30-37). Note that peptide of the reference have at least 50% hydrophobic amino acid, and the B variable corresponds to a glutamic acid, as claimed in claim 3 and 6 of the instant application. The reference further teaches pharmaceutical composition for the treatment of myasthenia gravis (see page 11, lines 30-37). It is well known in the art myasthenia gravis is a disorder in which T-cells are involved. Thus, the reference anticipates the claimed invention."

Applicant respectfully traverses the rejection. The present invention is directed to peptides that inhibit T-cell antigen receptor (TCR) function, by interfering with the assembly of this receptor. More specifically, the present inventor has found that it is possible to disrupt T-cell receptor function by the use of peptides derived from protein sequences critical for receptor assembly. The present inventor has designed peptides that correspond to transmembrane sequences common to both CD4 and CD8 cells and other unique sites of TCR chain interaction. These peptides have a particular structure and polarity that enables them to interfere with T-cell receptor assembly and function.

In contrast, Mozes *et al.* is directed to peptides that comprise T-cell epitopes and that bind to MHC gene products on the surface of intact cells such as antigen presenting cells. Page

4, lines 23-25 and p. 5, lines 9-33 describe that the peptides of the Mozes *et al.* invention bind with MHC gene products but do not stimulate T-cells, thereby blocking interactions with pathogenic autoantigens. There is nothing in Mozes *et al.* disclosure to suggest that the peptides interfere with T-cell antigen receptor assembly or function.

Claim 1 as amended makes these differences even more explicit. This rejection should now be overcome. Claims 3, 6, 13 are dependent on claim 1, thus these rejections should be overcome as well.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE".

Pursuant to the above amendments and remarks, reconsideration and allowance of the pending application is believed to be warranted. The Examiner is invited and encouraged to directly contact the undersigned if such contact may enhance the efficient prosecution of this application to issue.

Since an independent claim was withdrawn and an independent claim added, it is believed that no additional fees are necessary at this time. This amount is believed to be correct;

however, the Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 14-0629.

Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that this correspondence and all other referenced correspondence are being deposited with the United States Postal Service as first class mail in an envelope addressed to: BOX NON-FEE AMENDMENT, Assistant Commissioner of Patents, Washington, D.C. 20231, on the date listed below.

Gwendolyn D. Spratt — 8-23-01

Gwendolyn D. Spratt — Date

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

No changes.

IN THE CLAIMS

Claim 2 has been cancelled.

Claim 1 has been amended as follows:

1 (Amended). A peptide which inhibits T-cell antigen receptor (TCR) function, wherein the peptide is of the following formula:-

R1-[A] X-[B] Z-[A] X-R2 in which

[A] X is a hydrophobic amino acid or a hydrophobic peptide sequence comprising between 2 and [10] 6 amino acids

[B] Z is a charged amino acid

R1 is NH2 and

R2 is COOH.

Claim 3 has been amended as follows:

3 (Amended). [A] The peptide according to claim 1 [or claim 2] wherein at least 50% of the amino acids which make up the hydrophobic peptide sequence are hydrophobic amino acids.

Claim 4 has been amended as follows:

4 (Amended). [A] The peptide according to [any one of] claim[s] 1 [to 3] wherein [B] Z is selected from Arg and Lys.

Claim 5 has been amended as follows:

5 (Twice Amended). [A] The peptide according to [any one of the] claim[s] 1 [to 4] which has the formula

NH2-Ile-Leu-Leu-Leu-Lys-Val-Ala-Gly-Phe-OH,

NH2-Ile-Leu-Leu-Leu-Lys-Val-Ala-Gly-OH,

NH2-Leu-Arg-Ile-Leu-Leu-Leu-Gly-Val-OH,

NH2-Leu-Gly-Ile-Leu-Leu-Leu-Lys-Val-OH,

NH2-Ile-Leu-Leu-Gly-Lys-Ala-Thr-Leu-Tyr-OH,

NH2-Met-Gly-Leu-Arg-Ile-Leu-Leu-Leu-OH, or

NH2-Leu-Leu-Met-Thr-Leu-Arg-Leu-Trp-Ser-Ser-COOH.

Claim 6 has been amended as follows:

6 (Amended). [A] The peptide according to [any one of the]claim[s] 1 [to 3] wherein [B] Z is selected from aspartic acid and glutamic acid.

Claim 8 has been amended as follows:

8 (Amended). A peptide which inhibits TCR function, wherein the peptide is derived from the TCR-α intracellular chain and comprises the formula:

NH2-Ala-Gly-Phe-Asn-Leu-Leu-Met-Thr-COOH (SEQ ID NO. 16).

Claim 12 has been amended as follows:

12 (Twice Amended). A peptide [according to any one of claims 9 to 11] which inhibits T-Cell antigen receptor function wherein the peptide has the formula:

NH2-Tyr-Gly-Arg-Ala-Asp-Cys-Gly-Ile-Thr-Ser-OH, or

NH2-Trp-Gly-Arg-Ala-Asp-Cys-Gly-Ile-Thr-Ser-OH, or

NH2-Tyr-Gly-Arg-Ala-Asp-Cys-Ile-Thr-Ser-OH, or

NH2-Ser-Ser-Asp-Val-Pro-Cys-Asp-Ala-Thr-Leu-Thr-OH.

Claim 13 has been amended as follows:

13 (Amended). A therapeutic composition active against disorders in which T-cells are involved or recruited comprising a peptide as claimed in [any one of] claim[s] 1 [to 12] and a pharmaceutically acceptable carrier.